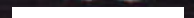


California Ocean Science Trust

Progress Report from October 2017 through September 2019



CALIFORNIA
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Introduction

California Ocean Science Trust (OST) bridges the gap between cutting edge scientific research and sound ocean management, accelerating progress towards a healthy and productive ocean future for California.

OST is a 501c(3) founded in 2000 by state legislation, the California Ocean Resources Stewardship Act (CORSA), to work in service of California's goals of a healthy, resilient and productive ocean and coast. Our strength lies in nimble response to state priorities, creating scientific partnerships and collaborations to foster innovative yet pragmatic approaches to difficult problems.

As required by CORSA, we are pleased to present a report of our activities for the two-year period October 2017-September 2019. The realities and impacts of a changing climate and changing ocean conditions have become ever more clear. In the last three years alone, Californians have witnessed an unprecedented marine heat wave, a record harmful algal bloom, a prolonged period of elevated coastal sea levels, and a near-complete loss of northern kelp forests. While our scientific understanding of these impacts is still rapidly evolving, we are pleased to have contributed to the development of new solutions- and adaptation-oriented research trajectories. Science-based recommendations for adaptation, or roadmaps for action and investment, already characterize the majority of our recent and current projects, and we have centered our work over the last two years on statewide efforts to inform new state policy.

A refreshed vision for 2020

This year we celebrate the 20th anniversary of our founding legislation. In preparation, we have reflected on our experiences, challenges and successes and refreshed our strategic vision for 2020 and beyond. Download "California Ocean Science Trust: A Vision for 2020," our new strategic vision document [here](#).

With new leadership, and following a period of leadership transition, we have re-established an independent identity and value proposition in California expressed in the OST 2020 strategic vision. This refreshed vision puts emphasis on not whether science supports policy and management decisions, but rather how it accelerates progress. It reaffirms our unique role and place in state government. And it reconnects to CORSA and the interpretation of that founding legislation as building science capacity on behalf of state priorities.

Building scientific capacity on behalf of state priorities

OST occupies a unique niche; we serve as California Ocean Protection Council (OPC) Science Advisor and as Secretariat of the OPC's Science Advisory Team (OPC SAT).

In partnership with OPC, we continue to refine an updated expression of what it means to be OPC Science Advisor. At the heart of this role are activities to build and diversify the science capacity in California applied to state ocean and coastal priorities. Whether supporting new funding sources or amplifying existing investments with leveraged funds, aligning education programs with research priorities, or fostering diversity and inclusion in marine sciences, this role capitalizes on our non-profit status and unique government relationship.

We continue to serve as Secretariat of the OPC SAT and have measurably strengthened the governance of this body, lifting the ability of the OPC SAT to provide timely and useful science guidance to the State. In 2019 we led a search for new OPC SAT members. The call for new membership included the social sciences (resource

economics, anthropology, and environmental justice, among others) in addition to the natural sciences, and the response was incredibly positive, in both numbers and expertise. We received over 50 well-qualified nominations. This overwhelming response signals the high esteem for the work of the OPC SAT, and an acknowledgment of the unique and successful partnership between OPC, OST, and OPC SAT. Ten new members were approved at the May 2019 OPC public meeting. More information about the OPC SAT is available [here](#).

Our Programmatic Achievements

Climate Change and Adaptation

California's 4th Climate Assessment Coast and Ocean report is released

The state of California has been addressing climate change for over 20 years. Scientific assessments are an important way that state and local leaders better understand how climate change is currently affecting us, what we might expect in the future, and what we can do about it. Previous California climate assessments have focused on the physical changes expected in our oceans, including sea-level rise and changing ocean chemistry. In 2017, in partnership with OPC, we launched a new effort to bring a greater focus and attention on ocean ecosystems as a component of California's 4th Climate Assessment, culminating in the first standalone chapter focused on the coast and ocean.

In the statewide chapter, we collaborated with OPC staff to convene a working group of the OPC SAT to

- synthesize knowledge of the impacts of climate change on human coastal communities and associated ocean and coastal ecosystems;
- advance science-based solutions to inform decision-making; and
- identify emerging issues, knowledge, and policy gaps to advance the State's ongoing adaptation research and funding agenda.

This report was finalized and released in 2018. Download the report [here](#).

Taking Action on Ocean Acidification

Building on the recommendations of the West Coast Ocean Acidification and Hypoxia Science Panel, in 2018, OST supported OPC with the development and release of the newly adopted State of California Ocean Acidification Action Plan (Action Plan), a bold 10-year vision for the State to take tractable and strategic actions and make targeted investments to reduce and prepare for the impacts of ocean acidification (OA). This plan positions California as an international leader on this issue and fulfills one of California's obligations to the International OA Alliance. OST developed a strategic outreach and communication plan to engage decision-makers and end-users in implementation of the Action Plan, and built an active constituency to maximize impact. Download the Action Plan [here](#).

OAH Science Task Force guides wise investment of public funds

In 2018, OST convened the legislatively mandated OAH Science Task Force on behalf of OPC and in the first year of its tenure the Task Force provided science guidance to support the Action Plan. With OPC support, the Task Force term has been extended through 2021 and we have begun an ambitious work plan that will focus on: (1) stewarding a west coast-wide monitoring gaps analysis aimed at helping west coast states identify where future decision-focused monitoring investments should be made, and (2) engaging the broader

scientific community to explore novel, longer-term science and technology solutions for OAH. Find out more about the OAH Science Task Force [here](#).

Visualizing species vulnerability to OA to support resource management decisions

OA continues to challenge state and local managers and policymakers in pursuing actions that will produce measurable societal benefits. Where and how should natural resource managers act?

OST worked closely with scientists at UC Davis Bodega Marine Lab, the OPC and other partners to demonstrate the potential impacts of OA on important species and ecosystems in California. Taking inspiration from similar efforts in Alaska, we undertook a synthesis of current scientific understanding and developed an infographic summarizing the latest research on potential OA impacts to important fishery species in California. We were thrilled to see the positive response to this product which has been posted on lab doors, shared with decision-makers, and picked up by local media. Download the infographic [here](#).

Building on this assessment, OST hosted a workshop in November 2018, to help managers and decision-makers incorporate information on OA impacts into relevant management decisions, prioritize efforts to address these impacts and determine where to allocate resources to further increase understanding. This workshop brought together managers, policy makers and scientists to better understand the concept of OA hotspots, ensure it is usable by state decision-makers, and identify key gaps in data and information that inhibit action. The workshop summary is available [here](#).

New research launched to deepen understanding of OA vulnerability

While the past decade has seen the rapid development of science-based tools and partnerships to address changing ocean chemistry across the US west coast, resource managers still face challenges in identifying where, when, and how to act. Newly funded research, being conducted from 2019-2021, will analyze where organisms along the US west coast are vulnerable to changing ocean chemistry and identify locations prime for action.

To launch this effort, we convened a workshop in Summer 2019, bringing together researchers and decision-makers from across the west coast to inform how research outputs could be most relevant to imminent natural resource management and policy decisions. More information on this effort is available on our website [here](#).

Sustainable Fisheries

Supporting CDFW in building science capacity for fisheries management

To support the California Department of Fish and Wildlife (CDFW) in implementing the 2018 Marine Life Management Act (MLMA) Master Plan amendment, OST conducted an assessment of the Marine Region's science and technical needs and provided recommendations for increasing science capacity applied to state fisheries management. Designed as a suite of options for CDFW leadership to explore, recommendations included the creation of a science task force to provide advice and oversight of peer review processes, and steps to engage academic institutions, partners and contractors to access socioeconomic and technical modelling expertise.

Addressing fishing community impacts of climate change

California coastal fishing communities are already experiencing new and unpredictable challenges from climate change. In partnership with CDFW, California Fish and Game Commission (FGC) and OPC, OST convened a

learning workshop in July 2019 with state policymakers, scientists, fishing industry representatives, and NGOs to explore how state management tools can support adaptation by fishing communities.

Emerging recommendations - supported by state partners - included designing a template to understand different needs for climate change readiness and future infrastructure in different ports along the coast, and the establishment of a working group to explore the feasibility of flexible leases for fishing permits. Download a workshop summary [here](#).

Scientific peer review of the Pacific herring FMP

Pacific herring, a schooling fish species found throughout California, play an important role in the marine ecosystem and support important commercial and recreational fisheries in state waters. Concerns about changing ocean conditions, sea-level rise, loss of spawning habitat and more have prompted the need for a Pacific herring fishery management plan (FMP) to inform decisions on the future of the herring fishery in accordance with the MLMA.

In 2018, at the request of CDFW, we convened an independent scientific review to ensure that the science underpinning the FMP represents the best scientific information available and is appropriately used. Through engagement and collaboration with scientists from around the country, this review provides CDFW and stakeholders with clear guidance for improving the science supporting the FMP. It also serves as a valuable test-case and model for incorporating ecosystem and climate change considerations into state fisheries management.

The final peer review report is available [here](#). To share more about these panel recommendations and engage with interested community members, OST hosted a public webinar upon completion of the review with the peer review panelists and attended by participants representing the FMP steering committee members, other stakeholders, academia and managers.

Red abalone FMP peer review explores new tools and processes for stakeholder engagement

A primary goal of fishery management under the MLMA is to ensure that fishing levels are sustainable and do not result in an overfished stock. The northern California populations of red abalone support a very popular local recreational fishery. While past landings (2002-2011) appear to be stable, recent declines in subtidal stocks have been recorded and the fishery is currently closed. Red abalone has several characteristics which make it vulnerable to fishing pressure and environmental fluctuations. Recent declines and concerns about changing ocean conditions have prompted CDFW to develop an FMP to improve data collection and support timely management response.

OST, with support from OPC, was requested by the FGC and CDFW, to coordinate an external, independent peer review of two proposed management strategies; one proposed by CDFW and one stakeholder-submitted strategy led by The Nature Conservancy (TNC).

In addition to the peer review itself, this ambitious effort added another layer to an already complex landscape: stakeholder engagement in the peer review process. How does an interested and engaged stakeholder constituency participate in a scientific peer review process? How do we promote transparency and accessibility to scientific deliberations without biasing the integrity of a review? The OST team designed and implemented a novel step in the review process - a public webinar designed to elicit interest and questions from a broad constituency at the outset of the review, and another public webinar to share the

results. Attended by over 70 participants, representing stakeholders, academia, managers and NGOs, OST was applauded by CDFW for responsiveness to growing stakeholder concern.

OST worked with the peer review panel to craft a final report that was genuine to the findings of the peer review panel while using language that prevented the report from being used as a tool to pit one group of scientists against another. Because of our neutral position, we were asked to present the peer review findings at the FGC meeting in October 2018. Download the peer review report [here](#).

Rapid science assessment conducted to support discussions about aquaculture

To support OPC in identifying opportunities for additional science investment or synthesis to advance the complex discussions around marine aquaculture, OST conducted a rapid assessment of the science landscape and developed a science roadmap. Key findings suggest that, while critical, science alone cannot advance this conversation. The main challenges lie in the disconnect between scientific progress and its uptake into the state's regulatory framework and influence on public perceptions.

Opportunities identified to help move the conversation forward include establishing an interagency working group and/or a science steering committee to increase science and agency coordination, conducting a collaborative spatial analysis workshop to better understand potential expansion and cumulative impact, and leveraging the wealth of expertise in California to deepen understanding. Beneficial analyses include spatial analyses of impact (especially under changing ocean conditions), social and economic benefits and drawbacks, and exploring species interactions and multi-trophic culture strategies and impacts.

Marine Protected Areas

Scientific guidance for Once-Through Cooling Mitigation Policy

California's Once-Through Cooling Policy (Policy) was adopted by the State Water Resources Control Board, establishing technology-based standards to implement federal Clean Water Act section 316(b) to reduce the harmful effects associated with power plant cooling water intake structures on marine and estuarine life. The Policy requires power plants that were not in compliance by October 2015 to either perform or pay for mitigation activities to account for the negative impacts between October 2015 and the date of the plants' full compliance with the Policy (interim mitigation). Section 3(e) of the Policy states, "It is the preference of the State Water Board that funding is provided to the California Coastal Conservancy, working with the California Ocean Protection Council (OPC), for mitigation projects directed toward increases in marine life associated with the State's Marine Protected Areas in the geographic region of the facility."

As OPC considers how to design a funding program to disburse once-through cooling (OTC) funds, they sought the scientific guidance of the OPC SAT to scientifically define the spatial extent of OTC impacts and to help understand which common open coast mitigation strategies are supported by scientific evidence to likely achieve the goal of increasing marine life as defined in the Policy.

The final report provides scientific guidance on ways to restore coastal areas impacted by power plants using OTC technology, helping safeguard the long-term health of California's marine life. This guidance was released in 2018. Download the report [here](#).

OPC SAT Working Group launched to deepen understanding of the statewide MPA network as a climate resilience tool

There is growing scientific interest in understanding the role that MPAs may play in building ecosystem resilience and providing societal benefits in the face of climate change. Assessing California's MPA network through the lens of climate impacts and adaptation may illuminate additional benefits beyond those considered at the time of designation of the MPA network.

With our partners at OPC and CDFW, we are designing and leading a process to bring together an interdisciplinary group of scientists to assess what we know about the role of MPAs in providing climate resilience. This expert group was scoped in summer 2019 and formally launched at the end of the year. More details are available on our website [here](#).

OPC SAT Working Group launched to develop a framework for MPA network decadal management reviews

In partnership with OPC, CDFW, and the FGC, OST is convening an OPC SAT working group to provide scientific guidance on a framework for network-wide evaluation of the performance of the MPA network against the goals laid out in the Marine Life Protection Act (MLPA). In order to provide the most salient science guidance, OST assembled and convened a Policy Advisory Committee of agency leadership to articulate the questions most pressing to decision-makers. We are also engaging the scientists charged with collecting monitoring data, to ensure the working group explores appropriate scientific approaches for integrating those data, and other available data sources, into network-wide analyses. This scientific guidance will be integral in supporting California MPA network decadal management reviews, the first of which is slated for 2022. This expert group was scoped in summer 2019 and formally launched at the end of the year. More details are available on our website [here](#).

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Financial Summary

(FY2018 financials are included on the following page; FY2019 financials will be added following independent audit and prior to final submission of this report)

Statement of Activities and Changes in Net Assets

	FY2017-2018
Revenues	
Contributions	239,821
Contracts	1,027,632
Other	24,688
Total Revenues	1,292,140
Expenses	
Program Services	1,344,541
Supporting Services	
Management and General	185,508
Fundraising	66,832
Total Supporting Services	252,340
Total Expenses	1,596,881
Net Income	(304,741)
Change in Donor Intent	
Change in Net Assets	(304,741)
Net Assets at the Beginning of Year	3,244,092
Net Assets at the End of the Year	2,939,351

Statement of Financial Position

Assets	
Cash	1,840,747
Account Receivable	-
Contribution Receivable	
Grants Receivable	
Contracts Receivable	1,186,882
Prepaid Expense	27,840
Equipment	3,490
Total Assets	3,058,959
Liabilities	
Accounts Payable	43,186
Payroll Payable	61,715
Refundable Grant	
Deferred Support	-
Deferred Rent	14,708
Total Liabilities	119,609
Net Assets	
Unrestricted	3,244,092
Temporarily Restricted	
Total Net Assets	3,244,092
Total Liabilities and Net Assets	3,058,960